IN THE SPECIFICATION

Please amend the specification as follows:

At page 8, line 15 to page 9, line 3, please replace the paragraph contained therein with the following:

The principle of moisture sensing of the sensors shown in Figures 1 A-B are the same. However, a bent fiber probe usually has higher sensitivity compared with a ~~strait~~ straight fiber probe. This is because there is more light leaking out of the fiber core to interact with the sensing material in the cladding layer in the bent part of the fiber as observed in Khijwania et al., Optical and Quantum Electronics, vol. 31, 635-636 (1999). Therefore the "U" bent fiber probe embodiment is used to describe the present invention in greater detail. This is for convenience only and is not intended to limit the application of the present invention. In fact, after reading the following description, it will be apparent to one skilled in the relevant art(s) how to implement the following invention in alternative embodiments (*e.g.*, utilizing a straight optical fiber core or other configurations such as an "S" shape, serpentine, coil, angular, *etc.*).

At page 9, lines 10-14, please replace the paragraph contained therein with the following:

After cooling to room temperature, the bent part is soaked in a solution to wash off any organic material possibly sticking on the surface of the bent part of the fiber. In a preferred embodiment, this is accomplished by soaking the bent part in a hot solution of $K_2Cr_2O_7/H_2SO_4$ for at least 30 minutes. The bent part is then taken out of the solution and rinsed with de-ionized (DI) water.

At page 9, lines 15-20, please replace the paragraph contained therein with the following:

Next, the bent part of the fiber is further soaked in another solution to activate its surface hydroxyl groups. In a preferred embodiment, this is accomplished by soaking the bent part of the fiber in a solution which is at least 2 M NaOH ~~solution~~ for at least 12 hours to activate its surface hydroxyl groups. After rinsing the bent probe with DI water, it is coated with sol-gel silica, by for example, dipping it into a silica sol solution at least six times. The coated probe is then kept in a refrigerator for at least 12 hours ~~over night~~ before use.

At page 9, line 21 to page 10, line 4, please replace the paragraph contained therein with the following:

In an embodiment, the sol-gel silica coating solution is made by hydrolysis of a liquid ester of a silicic acid in the presence of a trace catalyst. Examples of a liquid ester of a silicic acid include tetramethyl orthosilicate and tetraethyl orthosilicate. In an embodiment, a suitable trace catalyst is ~~an hydrochloric acid or~~ ammonia or a mineral acid catalyst such as hydrochloric acid as described in Tao et al., Optics Letters, vol. 27, 1382-1384 (2002). The resulting liquid sol solution of silicic acid and organic alcohol is stored in a refrigerator before use. The silicic acid molecules in the liquid react slowly with each other to form a polymer during the storage. In a preferred embodiment, the coating of the probe is applied within twelve hours after the hydrolysis.

At page 17, lines 1-6, please replace the paragraph contained therein with the following:

Therefore, a protective coating, which is permeable to water vapor but blocks out liquid water, is essential to isolate the sol-gel silica coating from soil water. In an embodiment, silicone rubber is chosen as the protective coating material. One example of a silicone coating method

includes dipping the sol-gel silica coated fiber in a silicone rubber coating mixture and drying the optical fiber for at least 24 hours. In a related aspect, the mixture includes a silicone elastomer and a curing agent, where the mixture is diluted in toluene. Silicone rubber is highly permeable to water vapor and can block out liquid water. After applying a thin layer of silicone rubber protective coating on the top of the sol-gel silica coating, the resulting sensor can be used for long-term soil moisture monitoring.